REMARKS

For the reasons which follow, it is respectfully submitted that Claims 1-30 and 44-53 are patentable over the cited prior art. Accordingly, favorable reconsideration of this application is respectfully requested.

This application discloses and claims methods for use by a storage switch in a storage network (Claims 1-30), a linecard for use in a storage network (Claims 44-49), and a switch for use in a storage network (Claims 50 – 53) for classification of packets. As explained in the specification (see paragraph [0077]) classification helps the storage switch to perform storage virtualization and protocol translation at wire speed without the necessity of using the store-and-forward model of conventional systems, i.e., without buffering packets.

In the intelligence storage switch of the invention, classification is performed by the Packet Aggregation and Classification Engine (PACE) (see paragraph [0076]). The PACE is connected to an input/output port of the linecard of the switch and classifies incoming packets as data packets or control packets. Control packets comprise connection requests or storage management requests for the storage network. The classification function recognizes the difference between control and data packets so that data can be processed separately and faster to enable wire speed processing by the switch (see paragraph [0113]). Wire speed processing requires that the incoming packets be classified and processed without buffering.

The Rejections Under 35 USC §102(e)

The rejections of Claims 1-11, 13-20, 22-27, 29, 30 and 44-53 (comprising all independent Claims 1, 16, 24, 44 and 50) as anticipated by U.S. Patent No. 6,687,247 to Wilford et al. are respectfully traversed. Independent Claims 1, 16 and 24 are directed to a method for use by a storage switch in a storage network in which packets are classified and processed "without buffering". Independent Claim 44 is directed to a linecard for a storage network that classifies and communicates packets to different devices "without buffering"; and Claim 50 is directed to a switch for use in a storage network which classifies and communicates packets to different devices "without buffering".

Claim 1

Claim 1 recites:

> A method for use by a storage switch in a storage network, the method comprising:
> (a) receiving a plurality of packets by the switch, wherein the plurality of packets includes data packets and non-data packets;
> (b) classifying packets as data packets or non-data packets;
> (c) communicating the non-data packets to a first device and the data packets to a second device, and
> wherein said steps (a) – (c) are performed without buffering.

Wilford relates to a communications network, not to a storage network, and does not discloses the classification, processing and routing, without buffering, of packets in a storage network. Wilford does not disclose (or suggest) classifying and communicating packets in a storage switch without buffering, as claimed. Rather, Wilford explicitly discloses that inbound packets to his device are buffered. Accordingly, Wilford cannot anticipate any of the independent claims, or the claims dependent therefrom, and cannot either alone or in combination with other prior art render these claims obvious.

Specifically, as best illustrated in Figures 2 and 3 of Wilford, incoming packets in a communications network enter an inbound receiver 220 which "buffers the entire inbound packet at line rate into a comparatively small first in/first out (FIFO) buffer 315 . . ." (emphasis added) (see column 7, lines 5-8). A FIFO controller 310 separates the inbound packet into a header portion and a tail portion (column 7, lines 9-13), performs a rate check and modifies the header, recombines the header and tail portions of the packet, and supplies recombined packet to an inbound queue manager 240 (shown in Figure 4). This process is also explained further at column 5, lines 9-48.

Next, the complete packet with the modified header that is sent to the inbound queue manager 240 is ". . . buffered in inbound packet buffer 245" (emphasis added) (see column 5, lines 50-51). As the queues from the buffer are emptied and several queues are combined into a single queue of packets, the packets are sent either to the switch fabric 120 or to the linecard's CPU 440 (column 5, lines 55-59). It is packets with IP options, SRP controlled packets, and ICMP packets that are sent to the CPU (Column 5, lines 61-64) after the packets are read out of the incoming packet buffer 245 of the inbound queue manager 240.

Thus, Wilford explicitly discloses that inbound packets are buffered twice, first in a FIFO and then in an inbound packet buffer before the packets are separated and sent to either the switch fabric or to the CPU.

In order to anticipate a claim, a reference must identically disclose all of the claim elements. Claim 1 requires that packets received by the switch be classified as data packets or non-data packets, the non-data packets be communicated to a first device and the data packets being communicated to a second device, and that the receipt classification and communication of the packets be performed without buffering.

Since Wilford does not disclose receiving, classifying and communicating packets without buffering as set forth in Claim 1, but rather explicitly teaches buffering, Wilford cannot anticipate Claim 1 or Claims 2-15 which depend from Claim 1. Moreover, Wilford does not suggest a method as set forth in Claim 1, and therefore, cannot render these claims obvious.

Claim 16

Claim 16 is directed to a method which is substantially similar to that recited in Claim 1. The claim requires receiving a plurality of packets by a storage switch, classifying the packets into non-data packets and data packets; communicating to a CPU only the packets classified as non-data packets; and wherein the receiving classifying and communicating are performed without buffering.

Claim 24

Claim 24 is directed to a method for use in a storage network that is also similar to that recited in Claims 1 and 16, and recites receiving a plurality of packets by a linecard of a storage switch in a storage network, identifying by an identifier unit on the linecard each packet as a data or a non-data packet; communicating non-data packets to a CPU on the linecard and communicating data packets to a second device for further processing, and wherein the recited steps are performed without buffering.

Both Claims 16 and 24 also require that packets be processed "without buffering". Thus, for the same reasons set forth above in connection with Claim 1, Wilford cannot anticipate (or render obvious) independent Claims 16 or 24 or the claims dependent thereon.

Independent Claim 44 is directed to a linecard for use in a storage network that comprises a CPU, and a classifier that communicates, without buffering, non-data packets to the CPU and data packets to a second device. Independent Claim 50 is directed to a switch for use in a storage network that comprises a linecard which comprises means for classifying packets into control packets and data packets and communicating the control packets to a first device and the data packets to a second device, all without buffering.

Wilford does not disclose (or suggest) either a linecard or a switch in a storage network where processing or classifying packets is done without buffering, as recited in Claims 44 and 50. Accordingly, Wilford also cannot anticipate Claims 44 or 50 or the claims dependent thereon.

As to Claims 2, 3, 10, 17, 19 and 25, these are dependent claims which are deemed allowable for the same reasons as their corresponding independent claims. Furthermore, contrary to the Office's interpretation, Wilford does not disclose data packets that <u>form</u> a data request, including a read command, as set forth in Claim 2, for example. There is no such disclosure or suggestion at all in Wilford. Rather, Wilford discloses that a "read request" is a request to read a particular DRAM (buffer) output queue, and is generated by an MDRR module, as shown in Figure 14 and as described at column 34, lines 1-3. The read request is generated and sent to a read scheduler in order to read a queue from buffer which has been selected for reading (column 37, line 65- column, 38, line 40). Thus, it is Wilford's inbound queue manager that generates read requests in order to read out buffered packets from the inbound packet buffer. It is not received data packets that form a data request, as claimed. Accordingly, Wilford cannot anticipate Claims 2, 3, 10, 17, 19 and 25 for this reason also.

The remaining dependent claims depend either directly or indirectly from independent Claims 1, 16, 24, 44 and 50 or dependent Claims 2, 3, 10, 17, 19 and 25. Therefore, for the same reasons that their parent claims cannot be anticipated by Wilford, these claims cannot be anticipated by Wilford.

The Rejections Under 35 U.S.C. § 103

As to the rejection of Claims 12, 21 and 28 as unpatentable over Wilford in view of U.S. Patent No. 7,089,293 to Grosner, these are dependent claims which depend from independent Claims 1 or 24. Since Wilford does not teach or suggest the invention recited in these independent claims, and explicitly teaches buffering contrary to these claims, Wilford cannot alone or in combination with Grosner render obvious claims which depend from Claims 1 or 24. Thus, Wilford will not support a rejection of dependent Claims 12, 21 and 28. Accordingly, it is respectfully submitted that these claims are allowable over the cited references.

Dependent Claim 3 has been amended to address the objection to this claim by deleting the word "and".

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance, and early allowance of all claims is solicited.

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